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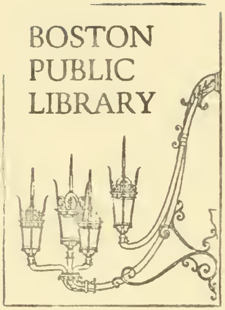

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DRAFT ENVIRONMENTAL IMPACT REPORT

150 FEDERAL STREET
BOSTON, MASSACHUSETTS

EOEA #5340

November, 1984

Prepared by HMM Associates

C. B.D.
H51M
FS

TABLE OF CONTENTS

Page

1.0 MEPA CORRESPONDENCE 1-1

2.0 SUMMARY 2-1

- 2.1 Name of Project/Brief Description 2-1
- 2.2 State Identification Number 2-1
- 2.3 Name of Proponent 2-1
- 2.4 Status of the EIR 2-1
- 2.5 Jurisdictions Affected (City and County) 2-1
- 2.6 Summary of Major Benefits, Costs and Impacts of the Project and Its Alternatives 2-2

3.0 DESCRIPTION OF THE PROJECT 3-1

- 3.1 Type of Project 3-1
- 3.2 Project Location 3-1
- 3.3 Project Characteristics 3-1
- 3.4 Construction Schedule 3-7
- 3.5 Permits Required 3-7
- 3.6 Sanitary Sewage 3-7
- 3.7 Storm Water 3-9

4.0 ALTERNATIVES 4-1

5.0 BOSTON SEWER SYSTEM 5-1

- 5.1 General 5-1
- 5.2 Site Vicinity 5-1
- 5.3 East Side Interceptor to Deer Island Treatment Plant 5-6

6.0 PROJECT IMPACT 6-1

- 6.1 Site Vicinity 6-1
- 6.2 East Side Interceptor to Deer Island Treatment Plant 6-2

TABLE OF CONTENTS (cont'd)

Page

7.0 MITIGATION MEASURES 7-1
    7.1 Project-Specific 7-1
    7.2 System-Wide Measures 7-2

8.0 REFERENCES 8-1

9.0 CIRCULATION LIST 9-1

LIST OF FIGURES

Figure 3-1 Project Location

Figure 3-2 First Floor Layout Plan

Figure 3-3 High Street Elevation View

Figure 3-4 Federal Street Elevation View

Figure 3-5 Matthews Street Elevation View

Figure 3-6 New Sewer Connections

Figure 5-1 Site Vicinity Sewer System

Figure 5-2 Site Vicinity to ESI

Figure 5-3 Typical Combined Sewer System

Figure 5-4 Existing Boston Interceptor System

Figure 5-5 Existing Combined Sewer Overflow Outlets

Figure 5-6 New Interceptor Lines

LIST OF TABLES

Table 5-1 Summary Data Combined Sewer Overflows

Table 5-2 Summary Data Overflow Water Quality

Table 5-3 Water Quality Summary Boston Inner Harbor

Table 5-4 Boston Harbor Water Quality Standards

MEPA
CORRESPONDENCE

APPENDIX A
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

ENVIRONMENTAL NOTIFICATION FORM

SUMMARY

A. Project Identification

1. Project Name 150 Federal Street

2. Project Proponent Meredith and Grew
Address 125 High Street, Boston, MA

B. Project Description: (City/Town(s) Boston, MA 02110

1. Location within city/town or street address Parcel bounded by Federal, Matthews, High Street, and the premises known as 211 Congress Street and 140 Federal Street.

2. Est. Commencement Date: February 1985 Est. Completion Date: April 1987
Approx. Cost $ 90M Current Status of Project Design: 25 % Complete

C. Narrative Summary of Project
Describe project and give a description of the general project boundaries and the present use of the project area. (If necessary, use back of this page to complete summary).

The project involves the construction of a new building on an L-shaped parcel in the financial district of downtown Boston. The parcel is bounded by Federal Street on the west, Matthews Street on the north, High Street on the south, and the rear of the building at 211 Congress Street on the east. The parcel wraps around the north and east sides of the United Shoe Machinery Corporation (USM) building, designated as a landmark by the Boston Landmarks Commission and on the National Register of Historic Places. Renovation of the USMC building in a manner acceptable to the Landmarks Commission is planned as a separate project. The new building will share lobbies and an atrium with the USMC building.

The building will have an 8-story wing fronting on Federal Street, replacing the existing 8-story office building at 132/136 Federal, attached to a 26-story, 321-foot-high mid-rise office tower on the site of what is now a 3-story parking garage on High Street.* High Street Place, an alley between the existing parking garage and the USMC building, will be discontinued and its location will become part of the project site.

The new building will have a multi-story glass atrium facing High Street, opening for views of the art-deco exterior of the landmark USMC building. The mid-rise office tower will have a stone and glass facade compatible in style and texture with the USMC building.

Copies of this may be obtained from:
Name: Scott T. McCandless Firm/Agency: HMM Associates
Address: 336 Baker Avenue, Concord, MA 01742 Phone No. 371-1692

Use This Page to Complete Narrative, if necessary.

The building will have about 509,000 gross square feet of space, yielding a floor area ratio of approximately 13.7 on its .8 acre site. This space will be used for offices, except for retail establishments on the ground floor. There will be approximately 263 underground parking spaces, helping to offset the loss of the present parking garage and its 335 spaces.

*The 321 foot height is measured to the parapet. Mechanicals reach a height of over 348 feet.

This project is one which is categorically included and therefore automatically requires preparation of an Environmental Impact Report: YES __X__ NO ______

D Scoping (Complete Sections II and III first, before completing this section.)

1. Check those areas which would be important to examine in the event that an EIR is required for this project. This information is important so that significant areas of concern can be identified as early as possible, in order to expedite analysis and review.

	Construction Impacts	Long Term Impacts		Construction Impacts	Long Term Impacts
pen Space & Recreation			Mineral Resources		
istorical	X	X	Energy Use		X
rchaeological			Water Supply & Use		X
isheries & Wildlife			Water Pollution		
egetation, Trees			Air Pollution	X	
ther Biological Systems			Noise	X	
nland Wetlands			Traffic	X	
oastal Wetlands or Beaches			Solid Waste	X	X
lood Hazard Areas			Aesthetics	X	X
hemicals, Hazardous Substances,			Wind and Shadow		X
High Risk Operations			Growth Impacts		
eologically Unstable Areas			Community/Housing and the Built		
gricultural Land			Environment		
ther (Specify)					

2. List the alternatives which you would consider to be feasible in the event an EIR is required.

The project as described and the no-build alternative are the only alternatives which should be considered in an EIR.

E. Has this project been filed with EOEA before? Yes ______ No X
If Yes, EOEA No. ______ EOEA Action? ______

F. Does this project fall under the jurisdiction of NEPA? Yes ______ No X
If Yes, which Federal Agency? ______ NEPA Status? ______

G. List the State or Federal agencies from which permits will be sought:

Agency Name	Type of Permit
1. Metropolitan District Commission	Industrial User Permit
2. Department of Environmental Quality Engineering (DAHM)	Possible Emergency Generator Fossil Fuel Utilization Permit
3. Department of Environmental Quality Engineering (DWPC)	Sewer System Connection Permit

H. Will an Order of Conditions be required under the provisions of the Wetlands Protection Act (Chap. 131, Section 40)?
Yes ______ No X
DEQE File No., if applicable: ______

I. List the agencies from which the proponent will seek financial assistance for this project:

Agency Name	Funding Amount
None	

II. PROJECT DESCRIPTION

A. Include an original 8½ x 11 inch or larger section of the most recent U.S.G.S. 1:24,000 scale topographic map with the project area location and boundaries clearly shown. Include multiple maps if necessary for large projects. Include other maps, diagrams or aerial photos if the project cannot be clearly shown at U.S.G.S. scale. If available, attach a plan sketch of the proposed project.

B. State total area of project: Approximately 0.8 acres
Estimate the number of acres (to the nearest 1/10 acre) directly affected that are currently:

1. Developed .... 0.8 acres
2. Open Space/Woodlands/Recreation 0 acres
3. Wetlands .... 0 acres
4. Floodplain .... 0 acres
5. Coastal Area .... 0 acres
6. Productive Resources
   Agriculture .... 0 acres
   Forestry .... 0 acres
   Mineral Products .... 0 acres

C. Provide the following dimensions, if applicable:
Length in miles ______ Number of Housing Units ______ Number of Stories 26

	Existing	Immediate Increase Due to Project
Number of Parking Spaces	335	72 Decrease
Vehicle Trips to Project Site (average daily traffic)	460	120
Estimated Vehicle Trips past project site	4100	300

D. If the proposed project will require any permit for access to local or state highways, please attach a sketch showing the location of the proposed driveway(s) in relation to the highway and to the general development plan; identifying all local and state highways abutting the development site; and indicating the number of lanes, pavement width, median strips and adjacent driveways on each abutting highway; and indicating the distance to the nearest intersection.

Source: Vanasse Hangen Associates

ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

Instructions: Consider direct and indirect adverse impacts, including those arising from general construction and operations. For every answer explain why significant adverse impact is considered likely or unlikely to result.

Also, state the *source* of information or other basis for the answers supplied If the source of the information, in part or in full, is not listed in the ENF, the preparing officer will be assumed to be the source of the information. Such environmental information should be acquired at least in part by field inspection.

A. Open Space and Recreation

1. Might the project affect the condition, use or access to any open space and/or recreation area?
   Yes ______ No __X__

Explanation and Source:

The project will not affect any open space or recreation area. The project will be constructed on a site which is already developed.

Source: HMM Associates

B. Historic Resources

1. Might any site or structure of historic significance be affected by the project? Yes __X__ No ______

Explanation and Source: The site abuts the United Shoe Machinery Corporation Building at 140 Federal Street, a building listed by the Boston Landmarks Commission and on the National Register of Historic Places. Renovation of the United Shoe Machinery Corporation building in a manner acceptable to the Landmark Commission is planned as a separate project. Common atria linking the new building with the renovated landmark building are expected to enhance the appeal of both structures.

Source: Jung/Brannen Associates, Inc.

2. Might any archaeological site be affected by the project? Yes ______ No __X__

Explanation and Source:

The Massachusetts Historical Commission lists no known archaeological sites in the project area. The site has been previously disturbed in the process of urbanization, destroying any potential for archaeological sites.

Source: Massachusetts Historical Commission

C. Ecological Effects

1. Might the project significantly affect fisheries or wildlife, especially any rare or endangered species?
   Yes ______ No __X__

Explanation and Source:

The site provides no habitat for fish or wildlife.

Source: HMM Associates

2. Might the project significantly affect vegetation, especially any rare or endangered species of plant?
Yes ______ **No** __X__
(Estimate approximate number of mature trees to be removed: ____0____**)**

Explanation and Source:

No vegetation of any kind exists on the site.

Source: HMM Associates

3. Might the project alter or affect flood hazard areas, inland or coastal wetlands (e.g., estuaries, marshes, sand dunes and beaches, ponds, streams, rivers, fish runs, or shellfish beds)? Yes ______ **No** __X__

Explanation and Source:

The project site contains no wetlands, nor is it in a flood hazard area. No effects on wetlands will occur. The surface area of the site is presently impervious, and will remain so.

Source: HMM Associates

4. Might the project affect shoreline erosion or accretion at the project site, downstream or in nearby coastal areas? Yes ______ **No** __X__

Explanation and Source:

See #3 above.

5. Might the project involve other geologically unstable areas? Yes ______ **No** __X__

Explanation and Source:

The U.S. Geological Survey places Boston, and most of southern New England in an area of seismic risk. The project site is no different from others in the Boston Basin in this respect. No faults or other geological instabilities have been noted.

Source: U.S. Geological Survey

D. Hazardous Substances

1. Might the project involve the use, transportation, storage, release, or disposal of potentially hazardous substances?
Yes ______ **No** __X__

Explanation and Source:

This project will not involve the use, transportation, storage, release or disposal of potentially hazardous substances except for those which are typically used in construction activities. Demolition of buildings at 132-136 Federal Street will require the removal and disposal of asbestos in accordance with DEQE requirements.

E. Resource Conservation and Use

1. **Might the project affect or eliminate land suitable for agricultural or forestry production?**
Yes ______ **No** __X__
(Describe any present agricultural land use and farm units affected.)

Explanation and Source:

The site is urban. The new building will be constructed on land which has been paved.

Source: HMM Associates

2. **Might the project directly affect the potential use or extraction of mineral or energy resources (e.g., oil, coal, sand & gravel, ores)? Yes** ______ **No** __X__

Explanation and Source:

There are no known mineral or energy sources on or near the project site.

Source: HMM Associates

3. **Might the operation of the project result in any increased consumption of energy? Yes** __X__ **No** ______

Explanation and Source:
(If applicable, describe plans for conserving energy resources.)

The project will contain about 509,000 gross square feet of space, primarily for general office use, so there will be an increase in energy consumption. The new building systems will be designed using energy conservation techniques.

Source: HMM Associates

F. Water Quality and Quantity

1. **Might the project result in significant changes in drainage patterns? Yes** ______ **No** __X__

Explanation and Source:

No change in drainage patterns should occur. The site is already covered either by buildings or paved surfaces, so there will be no increase in the impervious surface area.

Source: HMM Associates

2. **Might the project result in the introduction of pollutants into any of the following:**

(a) Marine Waters	**Yes** ______	**No** __X__
(b) Surface Fresh Water Body	**Yes** ______	**No** __X__
(c) Ground Water	**Yes** ______	**No** __X__

Explain types and quantities of pollutants.

All discharges from the project will enter the City of Boston sewer system. Only sanitary wastes and stormwater will be discharged; there will be no industrial or process wastes. About 38,150 gallons per day of sanitary waste will be discharged.

Source: HMM Associates

3. Will the project generate sanitary sewage? Yes X No ____

If Yes, Quantity: 38,150 gallons per day

Disposal by: (a) Onsite septic systems .... Yes ____ No X
(b) Public sewerage systems .... Yes X No ____
(c) Other means (describe) ____________________

The estimate is based on a design value of 75 gallons per day per 1000 square feet of space. Source: HMM Associates

4. Might the project result in an increase in paved or impervious surface over an aquifer recognized as an important present or future source of water supply? Yes ____ No X

Explanation and Source:

No aquifers exist at or near the site.

Source: Boston Water and Sewer Commission

5. Is the project in the watershed of any surface water body used as a drinking water supply?
Yes ____ No X

Are there any public or private drinking water wells within a 1/2-mile radius of the proposed project?
Yes ____ No X

Explanation and Source:

Drinking water on the Boston Peninsula is provided by the Metropolitan District Commission. There are no drinking water wells allowed within the City of Boston.

Source: Boston Water and Sewer Commission

6. Might the operation of the project result in any increased consumption of water? Yes X No ____

Approximate consumption 38,150 gallons per day. Likely water source(s) MDC

Explanation and Source:

Based on a design value of 75 gallons per day per 1000 square feet of space. A small additional amount will be required for cooling-tower makeup.

Source: HMM Associates

7. Does the project involve any dredging? Yes ____ No X

If Yes, indicate:
Quantity of material to be dredged ____________________
Quality of material to be dredged ____________________
Proposed method of dredging ____________________
Proposed disposal sites ____________________
Proposed season of year for dredging ____________________

Explanation and Source:

The project will not require any dredging.

Source: HMM Associates

G. Air Quality

1. Might the project affect the air quality in the project area or the immediately adjacent area?
Yes ______ No X
Describe type and source of any pollution emission from the project site. ______

No significant effects on air quality are expected. During construction some short-term fugitive dust emissions may occur. Emissions generated by vehicle trips generated by the project should have no discernable effect. The additional daily vehicular trips are minimal in comparison with the traffic volume on the Boston roadway network.

Source: HMM Associates

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any pollution emissions caused by the project, including construction dust? Yes ______ No X

Explanation and Source:

The project is in a commercial area consisting of buildings of similar uses.

Source: HMM Associates

3. Will access to the project area be primarily by automobile? Yes ______ No X
Describe any special provisions now planned for pedestrian access, carpooling, buses and other mass transit.

Access to the site is primarily by public transportation (70%) and secondarily by automobile (30%). The site is served by MBTA rapid transit from the State Street and Washington Street stations for the Red, Blue, and Orange lines and by the Green line at Park Street. Bus service consists of South-Station-based surface bus lines, including connections to the commuter rail lines, and express bus service from 100 Federal Street.

Source: BRA

H. Noise

1. Might the project result in the generation of noise? Yes X No ______

Explanation and Source:
(Include any source of noise during construction or operation, e.g., engine exhaust, pile driving, traffic.)

Construction activity will increase local noise levels. During operation, the project should not generate any noticable noise.

Source: HMM Associates

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any noise caused by the project? Yes ______ No X

Explanation and Source:

See G.2 above.

I. - Solid Waste

1. Might the project generate solid waste? Yes _____ No _____

Explanation and Source:
(Estimate types and approximate amounts of waste materials generated, e.g., industrial, domestic, hospital, sewage sludge, construction debris from demolished structures.)

J. Aesthetics

1. Might the project cause a change in the visual character of the project area or its environs?
Yes _____ No _____

Explanation and Source:

2. Are there any proposed structures which might be considered incompatible with existing adjacent structures in the vicinity in terms of size, physical proportion and scale, or significant differences in land use?
Yes _____ No _____

Explanation and Source:

3. Might the project impair visual access to waterfront or other scenic areas? Yes _____ No _____

Explanation and Source:

K. Wind and Shadow

1. Might the project cause wind and shadow impacts on adjacent properties? Yes _____ No _____

Explanation and Source:

IV. CONSISTENCY WITH PRESENT PLANNING

A. Describe any known conflicts or inconsistencies with current federal, state and local land use, transportation, open space, recreation and environmental plans and policies. Consult with local or regional planning authorities where appropriate.

There are no known conflicts or inconsistencies between this project and planning policies.

The project requires Boston Redevelopment Authority design and zoning reviews. It also requires review by the Massachusetts Historical Commission pursuant to 950 CMR 71.

V. FINDINGS AND CERTIFICATION

A. The notice of intent to file this form has been/will be published in the following newspaper(s):

(Name) Boston Herald (Date) September 28, 1984

B. This form has been circulated to all agencies and persons as required by Appendix B.

[illegible]
Date

B Fallon
Signature of Responsible Officer
or Project Proponent

Brian Fallon
Name (print or type)

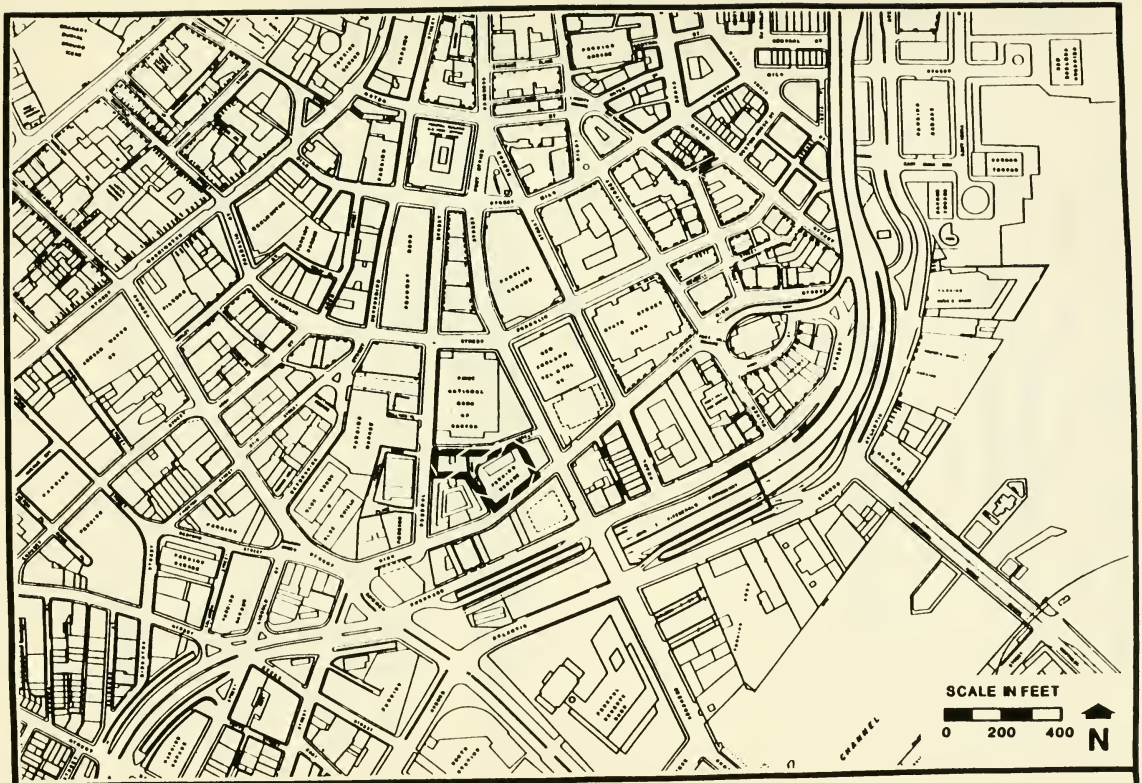
Address Meredith & Grew
125 High St., Boston, MA 02110
Telephone Number 482-5330

9/27/84
Date

S McCandless
Signature of person preparing
ENF (if different from above)

Scott T. McCandless
Name (print or type)

Address HMM Associates
336 Baker Ave., Condord, MA 01742
Telephone Number 371-1692



150 FEDERAL STREET SITE

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

RD J KING
VERNOR

A BEWICK
CRETARY

November 8, 1984

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

ON THE

ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : 150 Federal Street

PROJECT LOCATION : Boston, Massachusetts

EOEA NUMBER : 5340

PROJECT PROPONENT : Meredith & Grew

DATE NOTICED IN MONITOR : October 9, 1984

Pursuant to M.G.L., Chapter 30, Section 62A and 10.04(9) of the Regulations Governing the Implementation of the Massachusetts Environmental Policy Act, I hereby determine that the 150 Federal Street project does require the preparation of an Environmental Impact Report.

This project, currently under review by the Boston Redevelopment Authority for wind, shadow, and traffic impacts, is above the categorical ceiling for EIR preparation. MEPA jurisdiction is, however, limited to sewer issues. Thus, while the EOEA will review the reports to the BRA on other aspects of the project, the MEPA EIR need consider only the following items.

1. Prepare an inventory of the existing sanitary and storm sewer system serving the project site, including the sanitary sewer to the Deer Island headworks, the storm sewer to its points of discharge, and any combined sewer overflow locations. This inventory is to be based on data available from the Metropolitan District Commission and the Boston Water and Sewer Commission and should include location, size, normal flow, and peak flow for each sewer or discharge.

2. Discuss the volume of sanitary sewage and storm sewer flow to be generated by the 150 Federal Street project and the effects of this additional flow

on the system documented in the inventory. In particular, information should be provided on the changes in average and peak flows, on the changes in frequency and volume of combined sewer overflows, and on the effects of any increased discharges on the quality of Boston Harbor at and near discharge sites.

3. Evaluate possible mitigation measures to reduce impacts to the maximum practical extent. These can include the proposed storage and timed release system and the potential for separation of storm flows from sanitary sewage. For the storage system consideration should be given to release by time of day, by tidal cycle conditions, and under storm conditions.

The EIR should be prepared in accordance with the general guidance given in 301 CMR 10.05(7), must contain a copy of this Certificate, and should be circulated to those agencies listed in 301 CMR 10.31 and:

Division of Environmental Quality Engineering - Northeast
Division of Environmental Quality Engineering - Boston
Metropolitan District Commission
Metropolitan Area Planning Council
Boston Redevelopment Authority
Boston Water and Sewer Commission
Boston Landmarks Commission
Boston Preservation Alliance
Massachusetts Historical Commission.

It is also noted that the project may lead to the conversion of existing commercial parking spaces, subject to the parking freeze, to private spaces. This will lead to an increase in total parking available in the area and should be discussed with the Boston Air Pollution Control Commission .

November 8, 1984
DATE

JAMES S. HOYTE, SECRETARY

SUMMARY

2.0 SUMMARY SHEET

2.1 Name of Project/Brief Description

The name of the project addressed in this Draft Environmental Impact Report (EIR) is The 150 Federal Street Building. The development includes a new 28-story building which will contain approximately 536,000 square feet of office/commercial space. This new building will be connected at ground level with the existing 376,000 square foot USM Building at 140 Federal Street. The site is within the area bounded by Matthew Place, Congress Street, High Street and Federal Street.

2.2 State Identification Number

The EOEA project file number is 5340.

2.3 Name of the Proponent

The project proponent is Federal Development, Inc., with Meredith & Grew as the proponent's representative.

2.4 Status of the Environmental Impact Report

This document is the Draft EIR submitted pursuant to the requirements of the Massachusetts Environmental Policy Act (MEPA) and the associated regulations of the Executive Office of Environmental Affairs (EOEA) (301 CMR 10). The Draft EIR has been prepared as a result of the November 8, 1984 Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form. The content of the Draft EIR has been developed to comply with the determination of scope included in the Certificate.

2.5 Jurisdictions Affected (City and County)

The 150 Federal Street site is located in the city of Boston, Suffolk County.

2.6 Summary of Major Benefits, Costs and Impacts of the Project and Its Alternatives

2.6.1 Major Benefits

The 150 Federal Street project will help to alleviate the shortage of quality office space in Boston. Economic benefits include approximately $3 million in additional annual property taxes, approximately 2200 construction-related jobs, approximately 2000 permanent office and retail jobs and approximately $2.2 million in "linkage" payments for housing development in Boston.

2.6.2 Costs

The 150 Federal Street project will cost approximately $55 million dollars. The development is privately funded.

2.6.3. Environmental Impacts

This EIR addresses potential impacts associated with sewer issues. The project will add approximately 47,000 gallons per day of sanitary wastewater to the Boston Water and Sewer Commission sewerage system. This loading will be added to a combined sewer system that is currently overburdened due to increasing loads in the downtown area and tidal inflow. To mitigate potential impacts, the development will include a sewage detention tank which will store the sanitary sewage and release it at a rate of 200 gallons per minute during periods of low tide.

DESCRIPTION
OF THE
PROJECT

3.0 DESCRIPTION OF THE PROJECT

3.1 Type of Project

The 150 Federal Street development is a 28-story office/commercial building to be built adjacent to the existing USM Building. The primary uses of floor space in the new building will be for office, retail and restaurant uses.

3.2 Project Location

The site is approximately 66,430 square feet bounded on the north by Matthew Place, east by existing buildings on Congress Street, south by High Street and west by Federal Street (see Figure 3-1). Currently, the site contains the USM Building and a 330 space parking lot. The parking lot will be demolished in connection with the construction of the new building.

3.3 Project Characteristics

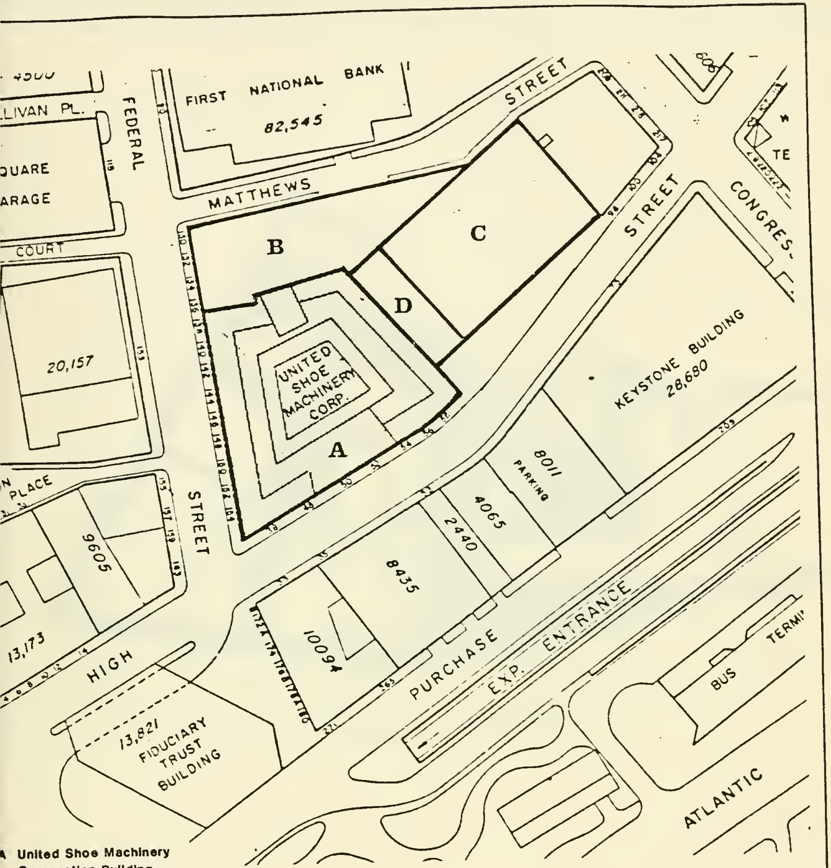
The new 28-story building will house approximately 526,000 square feet of office space and 10,000 square feet of retail/commercial space. Parking for no more than 300 vehicles will be provided at subsurface levels within the building.

The development will require the discontinuance of High Street Place which currently runs between the USM Building and the parking lot.

Figure 3-2 presents a first floor layout plan which shows the connection with USM Building. Figures 3-3 through 3-5 show elevation views of the development from three sides. The new building is subject to the Boston Redevelopment Authority's Planned Development Area design review process.

The new building will be physically joined to the USM Building only at ground level by a low-rise structure housing an atrium and entrance lobbies (see Figure 3-2). The two buildings will not share water or sewer utility systems.

e 3-1 Project Location



A United Shoe Machinery Corporation Building

B New Eight Story Wing

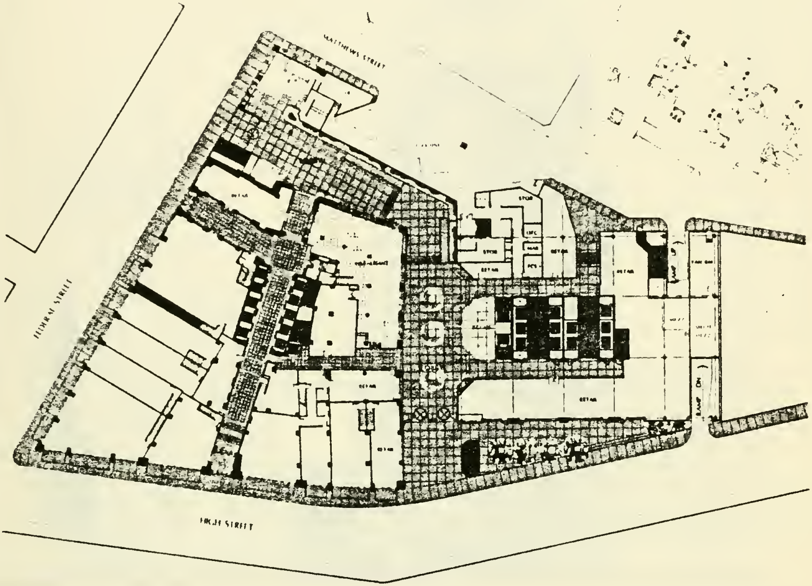
C New Twenty- eight Story Tower

D New Five Story Atrium

) FEDERAL STREET

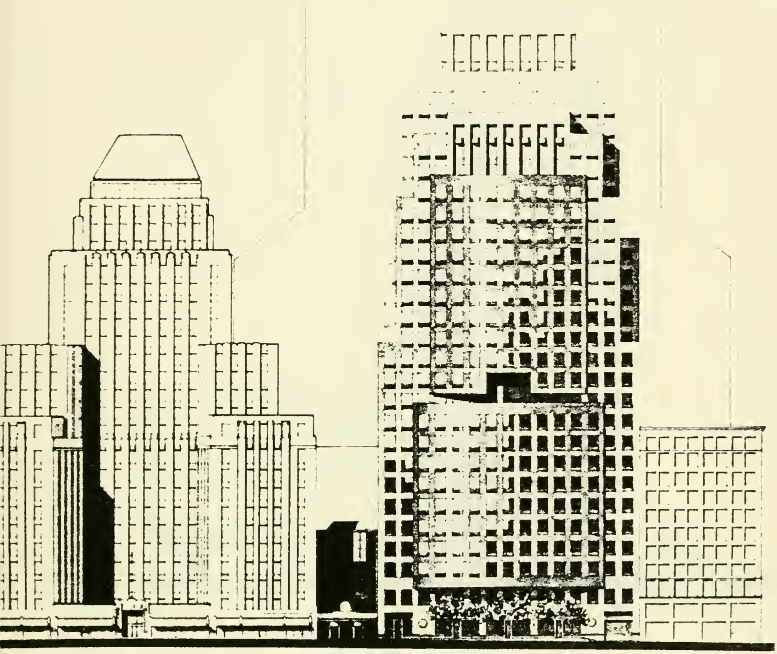
HMM Associates
Concord, MA

igure 3-2 First Floor Layout Plan



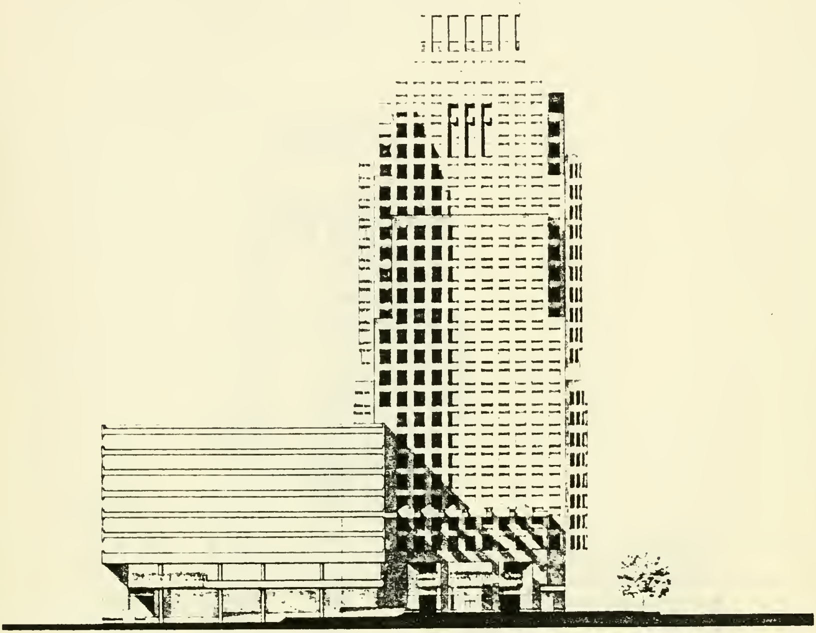
The Stubbins Associates, Inc.
Architects
1033 Massachusetts Avenue Cambridge, MA

3-3 High Street Elevation View



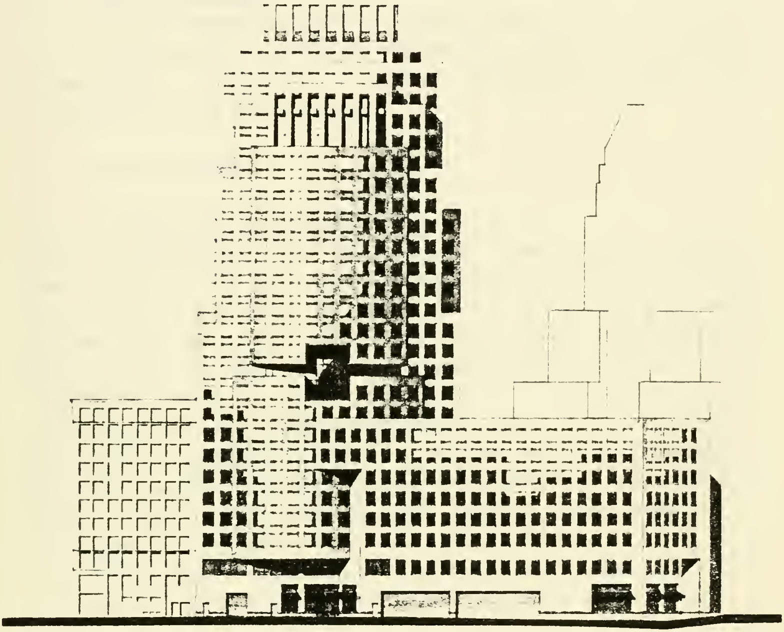
The Stubbins Associates, Inc.
Architects
1033 Massachusetts Avenue Cambridge MA
SEPTEMBER 26, 1984

igure 3-4 Federal Street Elevation View



The Stubbins Associates, Inc.
Architects
1033 Massachusetts Avenue Cambridge MA
SEPTEMBER [illegible] 1984

igure 3-5 Matthews Street Elevation View



The Stubbins Associates, Inc.
Architects
1033 Massachusetts Avenue Cambridge MA
[illegible]

3.4 Construction Schedule

Groundbreaking for the new building is scheduled for the second quarter of 1985 with project completion and occupancy expected by the second quarter of 1987.

3.5 Permits Required

The project requires state permits from the Metropolitan District Commission for use of the MDC sewer and from the Massachusetts Division of Water Pollution Control for connecting to the sewer system.

3.6 Sanitary Sewage

3.6.1 Expected Waste Volumes

Sanitary wastewater will be generated primarily from lavatory use throughout the building. The restaurant kitchen area will also generate sanitary wastewater. Estimates of the waste volumes have been developed using Massachusetts Department of Environmental Quality Engineering regulations (310 CMR 15.00, "Title 5") which specify factors to be used for various wastewater sources. The factors which apply to the 150 Federal Street project are 75 gallons per day for each 1000 square feet of office space, 5 gallons per day for each 100 square feet of retail space and 35 gallons per day for each seat in the restaurant (includes kitchen flow).

The amount of sanitary wastewater can be estimated using approximate use allocations within the building as follows:

Office Space: 526,000 ft^2 x 75 gal/day/1000 ft^2 = 39,450 gal/day
Retail Space: 10,000 ft^2 x 5 gal/day/100 ft^2 = 500 gal/day
Restaurant: 200 seats x 35 gal/day/seat = 7,000 gal/day
TOTAL 46,950 gal/day

The major part of this daily wastewater load will be generated between 8 A.M. and 5 P.M., the hours of active use of the office space.

3.6.2 Sewage Detention Tank

As described in more detail in Section 5.0, the site area sewerage system is a combined sewer which conveys sewage to the East Side Interceptor (ESI). The ESI currently experiences surcharging due to new sanitary loads and tidal inflow during high tide. The Boston Water and Sewer Commission (BWSC) expects to complete the process of replacing the ESI by 1987-1988. The BWSC is attempting to minimize peak discharges into the system prior to completion of the ESI replacement project. As one part of its overall program, the BWSC has established a policy requiring the use of sewage detention tanks for all new, large developments in the downtown and financial districts (Ref. 1)*. This tank detains the sanitary sewage and allows it to be discharged only during periods of low tide, when system surcharging due to tidal inflow is at a minimum.

The new building will comply with this policy and minimize its impacts on the sewer system by installing a sewage detention tank designed to hold 47,000 gallons of sanitary sewage, an entire day's estimated generation. The tank will be a waterproof concrete tank located in the basement parking area. The tank will be served by a lift pump and tidal clock as described below.

3.6.3 Pumping System

The detention tank will be equipped with a triplex lift pumping system and a programmable tidal clock. The tidal clock will be programmed to pump out the tank until empty during the two

---

* See reference listing in Section 8.0

four-hour low tide periods each day. No discharge will occur except during these periods.

The pump capacity to accomplish complete pump out during one four-hour low tide period occurring at the end of the business day is calculated as follows:

$$\frac{47{,}000 \text{ gallons}}{4 \text{ hours} \times 60 \text{ minutes per hour}} = 196 \text{ gpm}$$

The triplex pump system will use one of three 200 gpm pumps to complete the pumping operation. The system will operate only one pump at a time in rotation to ensure longer pump life and constant backup capability.

3.6.4 Sanitary Sewer Connection

The discharge from the sewage detention tank will be made to the BWSC sewerage system via a 10" pipe connecting to the 18" x 24" combined sewer located in High Street as shown on Figure 3-6. This connection will be separate from all storm water drain connections from the site.

3.6.5 Kitchen Drain

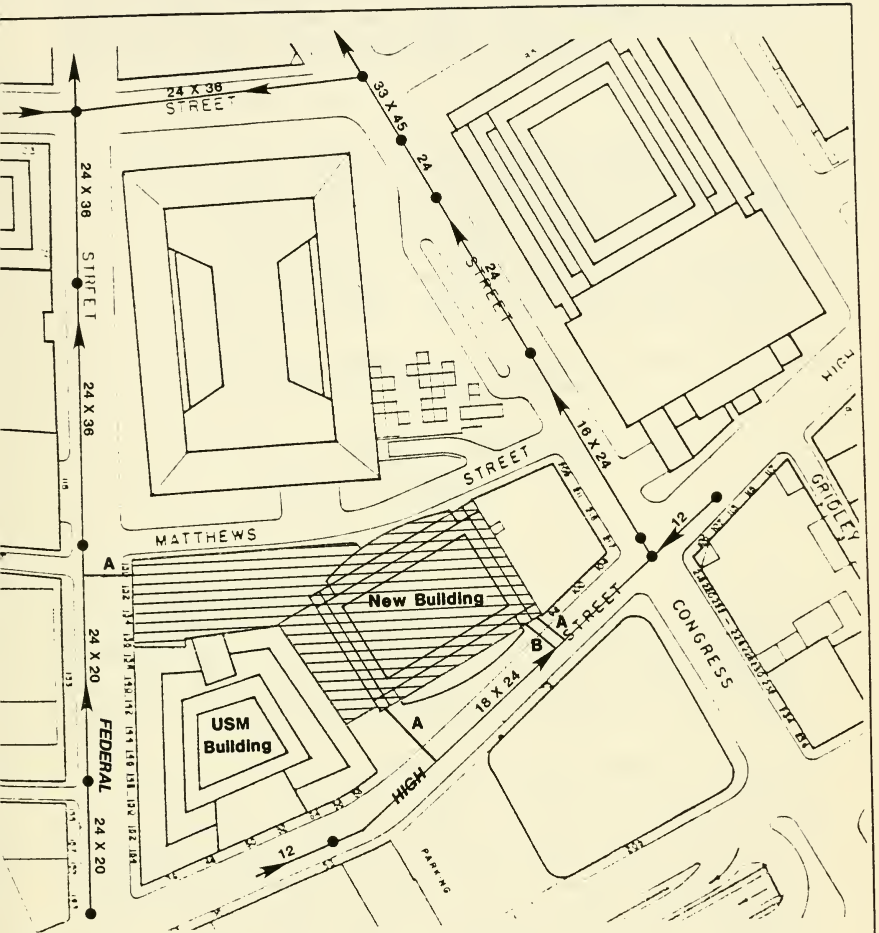
As another mitigation measure, a grease trap will be installed on the drain line serving the restaurant kitchen area. The trap will be sized to provide a 24-hour detention period for the kitchen flow to allow grease to solidify in the trap rather than the sewer lines. The trap will be cleaned periodically to assure proper operation.

3.7 Storm Water

3.7.1 Expected Runoff Volumes

New storm drains will be provided for the roof area of the new building. The roof area to be drained is approximately 30,000 square feet. The estimated volume of storm water is based upon

gure 3-6 New Sewer Connections



KEY

A - New 10' Storm Connection

B - New 10' Sanitary Connection

the 15 year storm with a 10 minute time of concentration as required by the Boston Water and Sewer Commission (Ref. 1). The design runoff (Q) is calculated as follows:

$$Q = C \times I \times A$$

where Q is the runoff in cubic feet per second,

C is the runoff coefficient (ratio of storm water running off to that which falls) which is assumed to be equal to 1 for conservatism,

I is the rainfall intensity which is 4.4 inches/hour for the design storm from the Boston rainfall curve,

A is the surface area to be drained which is approximately 30,000 square feet.

$$Q = 1 \times 4.4 \text{ inches/hr} \times 30{,}000 \text{ square feet} \times \frac{1 \text{ ft}}{12 \text{ inches}} \times \frac{1 \text{ hr}}{3600 \text{ sec}}$$

$$Q = 3.06 \text{ cfs}$$

3.7.2 Storm Connections

Storm drains from the new building will connect to the BWSC combined sewer system separately from the sanitary connection. This will allow easier adjustments should the BWSC implement separate storm and sanitary sewers in the area at some future time.

The storm drains will connect from the Federal Street side of the building via a 10" pipe into the 24" x 20" combined sewer located in Federal Street. The other side of the building will drain via two 10" connections into the 18" x 24" combined sewer located in High Street. Currently, the area is covered by impervious materials so that storm runoff will not change significantly as a result of the new building construction.

ALTERNATIVES

4.0 ALTERNATIVES

The current design of the 150 Federal Street building is the product of a lengthy review and negotiation process with the Boston Redevelopment Authority, the Boston Landmarks Commission and various interest groups. This design is the culmination of a series of alternative design assessments. As a result of this process, the current design is an established element of city approval and should not be considered subject to further alternatives analysis. In addition, the proponent has established the floor spacing and size as that necessary to obtain the return on investment required to proceed. A significantly smaller building would not be economically feasible. For these reasons, the project proponent has determined that the only current alternative to the proposed development is the "No-Build" option.

The "No-Build" alternative would result in leaving the site as is with the parking lot in place. Following the "No-Build" alternative would result in the elimination of 2200 construction jobs, the loss to the city of about $3 million in additional property tax revenues and the loss of about $2.2 million in "linkage" payments to the city. The "No-Build" alternative would eliminate the additional 47,000 gallons per day of sanitary sewage that would enter the combined system from the new building.

Section 6.0 addresses the impacts on the sewer system of the proposed development in relation to the existing situation, i.e. the "No-Build" alternative, which is described in Section 5.0.

BOSTON SEWER SYSTEM

5.0 BOSTON SEWER SYSTEM

5.1 General

The Boston Water and Sewer Commission (BWSC) operates the public sewer system within Boston. Sewer service throughout most of the downtown and financial districts of the city consists of combined sewers. This combined sewer system collects sanitary wastewater and storm water runoff and conveys the sewage to the East Side Interceptor (ESI). The ESI carries sewage to the Boston Main Interceptor which connects to the Metropolitan District Commission's (MDC) system leading to the MDC's Deer Island Treatment Plant. This plant provides primary treatment and chlorination before discharging the sewage to Boston Harbor.

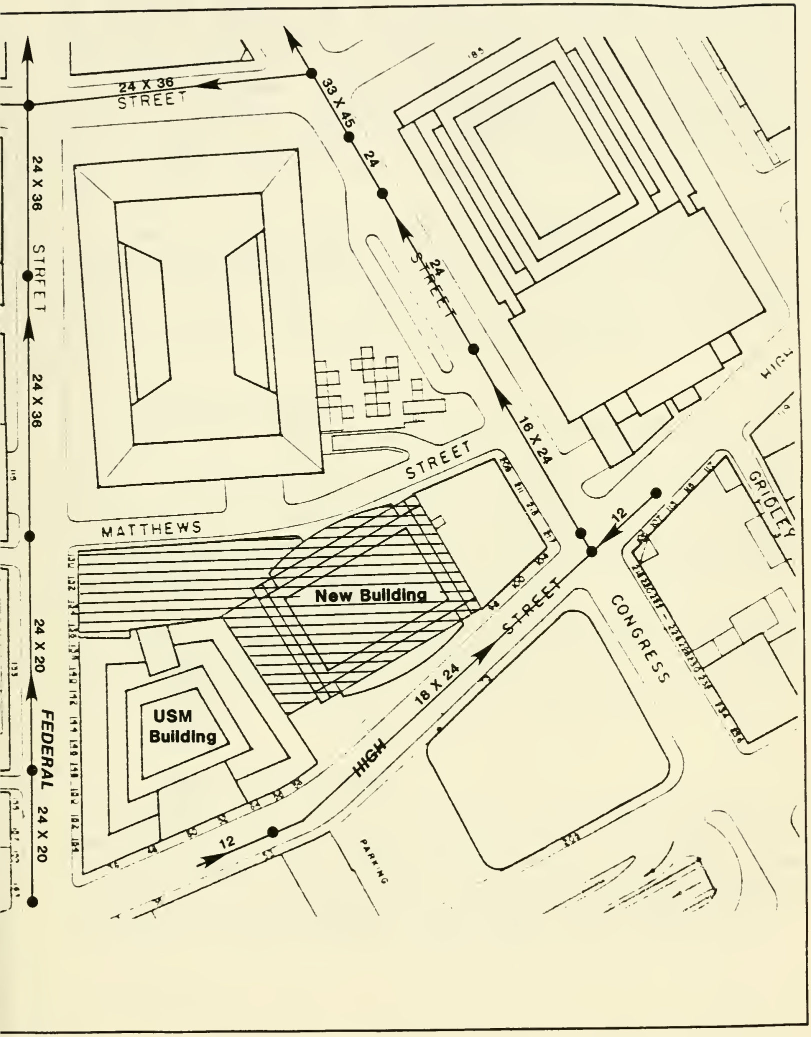
5.2 Site Vicinity

The sewer system serving the site area is shown on Figure 5-1. There are three combined sewers located in streets adjacent to the site. These are described below.

5.2.1 Federal Street Sewer

The Federal Street sewer is a 24" x 20" combined storm and sanitary sewer located just west of the site (see Figure 5-1). This sewer starts just north of the Federal-High Street intersection and runs north along Federal Street, increasing in size to 24" x 36" at the north end of the site near the Matthews Street and Federal Street intersection. At Franklin Street the sewer increases in size again to 28" x 40" before connecting into a 42" x 54" line at the Milk Street and Federal Street intersection. This Milk Street sewer expands in size to 60" x 67" and collects the sewage from much of the financial district, including Post Office Square and the Federal-Congress Street areas. This line proceeds to the East Side Interceptor

5-1 Site Vicinity Sewer System



FEDERAL STREET

HMM Associates
Concord, MA

at Atlantic Avenue and Milk Street near Central Wharf. A regulator in the conduit at this location diverts dry weather flow into the ESI. Excess wet weather flow overflows the regulator, bypasses the ESI and is discharged into Boston Harbor at outfall BOS-060, a combined sewer overflow off Central Wharf (see Figure 5-2). An illustration of the storm flow operation of a typical regulator is presented in Figure 5-3.

There are no data available on existing flows in the Federal Street sewer (Ref. 1). The calculated capacity of the initial 24" x 20" sewer line adjacent to the site is approximately 9700 gpm. This sewer begins at the site so that there are no significant upstream loads to be considered.

5.2.2 High Street Sewer

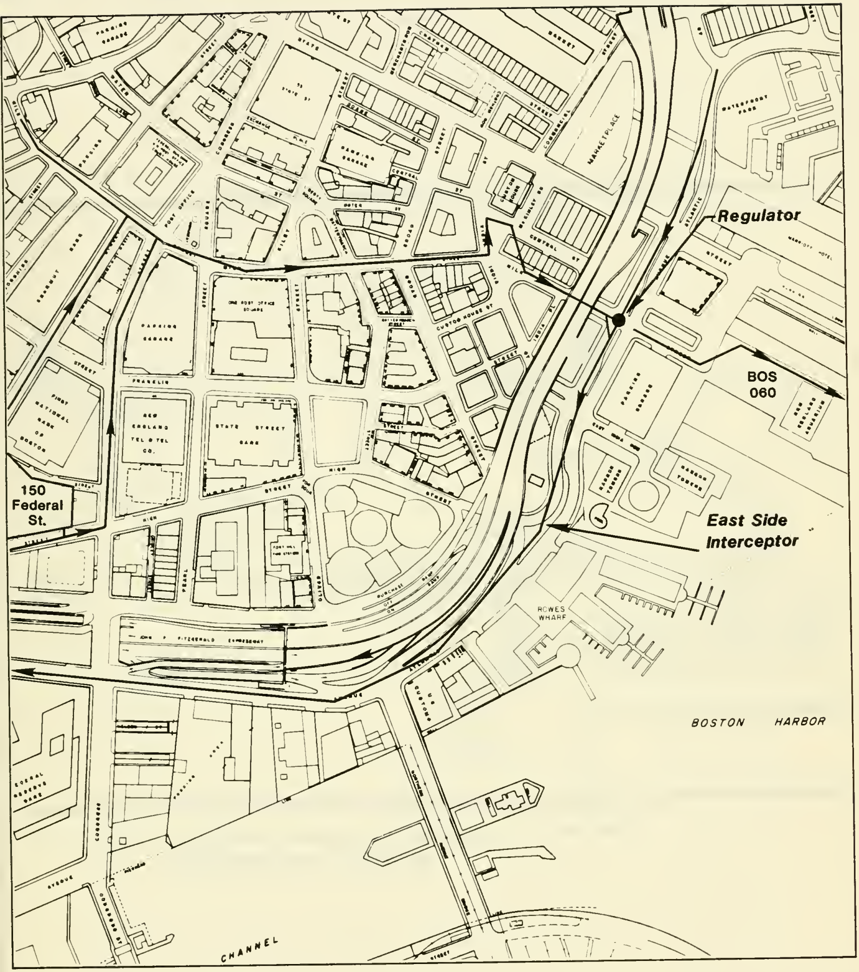
The High Street sewer is an 18" x 24" combined storm and sanitary sewer located just south of the site (see Figure 5-1). This sewer starts just east of the Federal-High Street intersection and runs east along High Street until it ties into the Congress Street sewer at the intersection of Congress and High Streets. The Congress Street sewer and the system leading to the ESI are described in the next section.

There are no data available on existing flows in the High Street sewer (Ref. 1). The calculated capacity is approximately 9500 gpm. This sewer begins at the site so that there are no significant upstream loads to be considered.

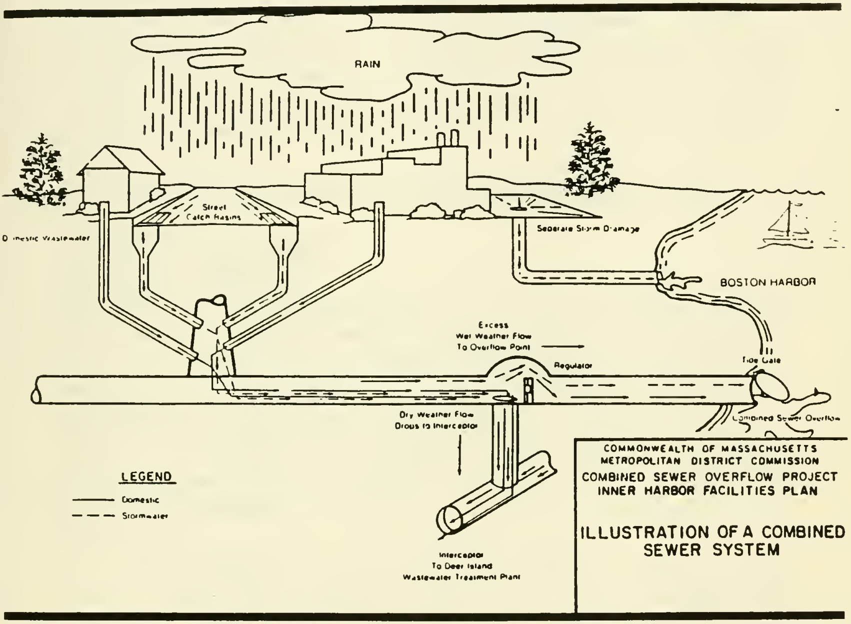
5.2.3 Congress Street Sewer

The Congress Street Sewer is a 24" x 16" combined storm and sanitary sewer located just east of the site (see Figure 5-1). The sewer starts at the Congress-High Street intersection where it receives flow from the High Street sewer previously described and a short 12" line serving a half block east on High Street.

Figure 5-2 Site Vicinity to ESI



igure 5-3 Typical Combined Sewer System


RAIN
Street Catch Basins
Domestic Wastewater
Separate Storm Drainage
BOSTON HARBOR
Excess Wet Weather Flow To Overflow Point
Regulator
Tide Gate
Combined Sewer Overflow
Dry Weather Flow Drops to Interceptor
LEGEND
Domestic
Stormwater
Interceptor To Deer Island Wastewater Treatment Plant
COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION
COMBINED SEWER OVERFLOW PROJECT
INNER HARBOR FACILITIES PLAN
ILLUSTRATION OF A COMBINED SEWER SYSTEM

Source: **"Combined Sewer Overflow Project Inner Harbor Area Facilities Plan", MDC, December 1982, O'Brien & Gere**

The Congress Street sewer runs north along Congress Street, increasing in size to 33" x 45" at the Franklin-Congress Street intersection. The line ends at the Milk Street sewer at the intersection of Congress and Milk Streets. The Milk Street sewer and the system leading to the ESI are shown on Figure 5-2 and described in Section 5.2.1.

There are no data available on existing flows in the Congress Street sewer (Ref. 1). The calculated capacity is approximately 6800 gpm. The upstream loads include the High Street sewer described in Section 5.2.2 and a short 12" line serving two High Street buildings just east of the Congress-High Street intersection.

5.3 East Side Interceptor to Deer Island Treatment Plant

5.3.1 Existing System

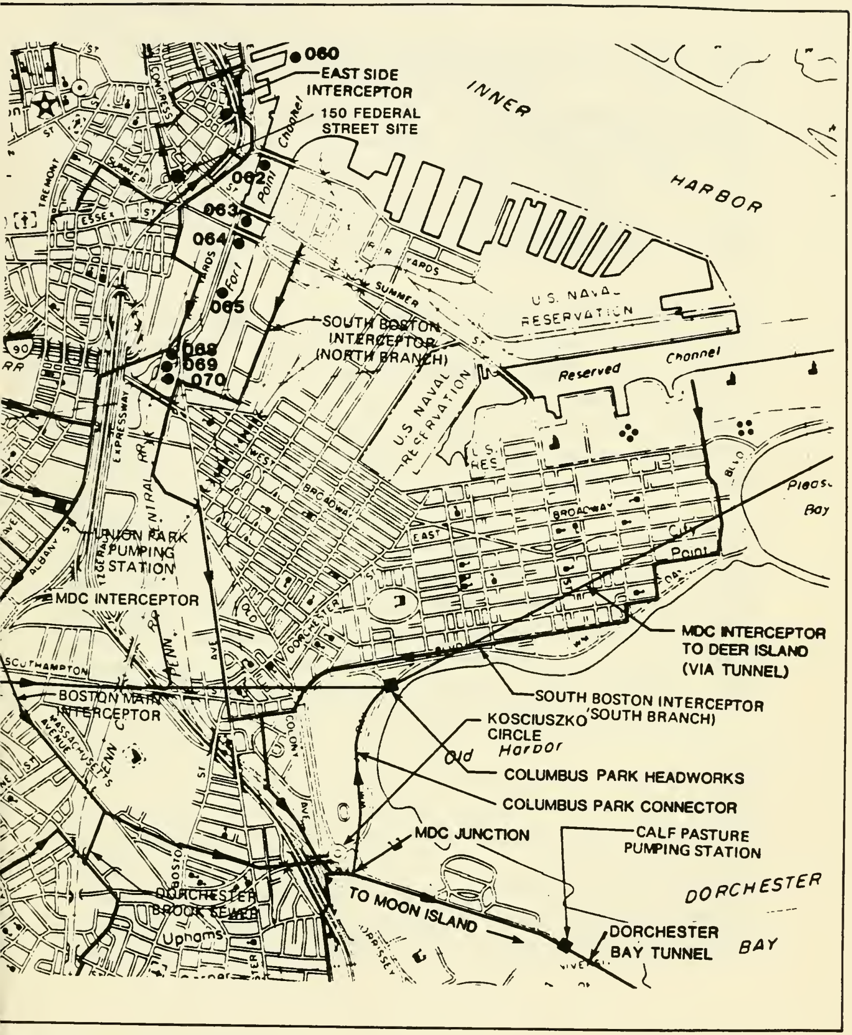
East Side Interceptor

The East Side Interceptor (ESI) carries dry weather sewage and some wet weather sewage from the financial and downtown areas, the Waterfront area, North End sections of Boston and portions of the South End, to the Boston Main Interceptor at Massachusetts Avenue and Albany Street. The interceptor is served by a series of regulators (see Figure 5-3) which divert sewage flow from various trunk lines into the ESI. Figure 5-4 presents the path of the ESI to the Boston Main Interceptor.

The ESI begins in the vicinity of Hanover Street and runs to the south along Commercial Street and Atlantic Avenue south under the South Station Railroad Yard, reaching Albany Street near Herald Street. It follows Albany Street to its connection with the Boston Main Interceptor at Massachusetts Avenue.

The ESI section from Eastern Street to Harbor Towers was replaced as part of the Waterfront Park Project. The Boston Water and Sewer Commission has initiated a project to replace

igure 5-4 Existing Boston Interceptor System



the remainder of the ESI by the end of 1987. This is discussed in Section 5.3.3.

The ESI section serving the financial district is a 100 year old 32" x 59" oblong brick conduit. Full flow capacity varies between 5 and 9 million gallons per day (MGD) in the section of the ESI from Central Wharf (where the project sewage reaches it) south to Rowes Wharf. It increases in size along the way until it reaches 48" x 60" at its junction with the Boston Main Interceptor. At the junction, full flow capacity is approximately 36 MGD (Ref. 2).

As described in the O'Brien and Gere report (Ref. 2), the ESI has a tributary area of 485 acres and served a daytime population of 171,500 people in 1980. The BWSC has stated that the section south of Central Wharf is more or less continuously at design capacity (5-9 MGD) (Ref. 1). Estimated average dry weather flows are about 8.1 MGD at the junction with the Boston Main Interceptor while peak flows can reach 36 MGD (Ref. 2).

The combined sewer overflow (CSO) directly affected by the project's sewage is BOS-060 at Central Wharf. There are seven other CSOs between Central Wharf and the Boston Main Interceptor. These CSOs discharge excess wet weather sewage flows into the Fort Point Channel at various locations as shown on Figure 5-4 (BOS-062, 063, 064, 065, 068, 069 and 070). Table 5-1 provides summary data on each of these CSO's.

Currently, significant problems exist in the operation of the ESI, including improper performance of regulators and tidegates, and sedimentation in the line. Also, the construction of the new section of the ESI along the Waterfront Park Project area has resulted in a hydraulic constraint in the ESI that will be eliminated when the remainder of the ESI is replaced in 1987. The new section

TABLE 5-1

SUMMARY DATA

COMBINED SEWER OVERFLOWS

Outfall Number	Location	Limiting Pipe** Capacity	Outfall Pipe Size
*BOS-057	Sargent's Wharf (Eastern Avenue)	442.4 MGD	96"
*BOS-058	Between Long Wharf and Commercial Wharf	292.2 MGD	84"
BOS-060	Central Wharf	88.6 MGD	72"
BOS-061	Rowes Wharf	No longer in use	
BOS-062	Ft. Point Channel South of Northern Avenue Bridge	86.7 MGD	54"x72"
BOS-063	Ft. Point Channel at Congress Street	8.7 MGD	36"
BOS-064	Ft. Point Channel at Summer Street	4.3 MGD	60"
BOS-065	Ft. Point Channel at Kneeland Street	97.4 MGD	81"
BOS-068	Ft. Point Channel at Broadway Bridge	205 MGD	72"
BOS-069	Ft. Point Channel at Fourth St. Bridge	43.7 MGD	48"
BOS-070	Ft. Point Channel at Fourth St. Bridge (Roxbury Canal Conduit)	935 MGD	2 @ 240"x180"

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* Not directly affected by project sewer flows

** Limiting pipe capacity depends on slope and size of pipes serving the outfall.

Note: All data are from "Combined Sewer Overflow Project, Inner Harbor Facilities Plan," MDC, December, 1982, prepared by O'Brien & Gere Engineers, Inc.

north of Harbor Towers is a 66" line with a capacity of 36 MGD. The old section south of Harbor Towers is a 32" x 59" line with a capacity of 9 MGD. The new section is approximately two feet below the old section of the ESI at their junction. This differential in elevation and capacity acts as an obstruction in the ESI which serves to back up flow in the pipe. This condition appears to have created constant surcharge conditions in the ESI and may be contributing to dry weather overflows at three CSOs in the area (BOS-057, 058 and 060) (Ref. 1).

Improper operation of tidegates also appears to foster periodic surcharge conditions in some portions of the combined sewer system. Most of the system in the area is below high tide level. Tidegates are designed to close during high tide periods to prevent inflow of sea water from the Harbor. The gates can become blocked open or broken allowing tidal inflow into the system. This allows water from the Harbor to reach the ESI and combined sewers.

The Boston Water and Sewer Commission is implementing a number of actions to improve combined sewer operations. These include an ongoing inspection and maintenance program along the ESI and its associated CSO's. This program includes inspections and required maintenance of regulators and tidegates on a schedule of two times each quarter. Tidal inflow currently occurs at BOS-060 (Central Wharf) and BOS-058 (Long Wharf) due to corrosion of the seatface of the tidegates, resulting in an incomplete seal which allows tidal inflow. Sea water enters and uses capacity in the pipes that would normally be available to wastewater. This sea water is then conveyed to the MDC's Deer Island Treatment Plant, adding to the overloading there. The sea water in the system also exacerbates the problem of dry weather discharge of wastewater to the Harbor. The BWSC plans to repair damaged tidegates in 1985 (Ref. 1).

As another element in its program, the Boston Water and Sewer Commission requires the use of sewage detention tanks for all large developments which contribute sewage flow to the ESI. These detention tanks are sized to collect an entire day's generation of sanitary wastewater from the development. This wastewater is then discharged only during low tide periods. This decreases the impact of the development's sewage on the surcharging problem caused by tidal inflow.

The most important element in the Boston Water and Sewer Commission's program has been the initiation of design of the replacement for the ESI from the new waterfront section all the way to the Boston Main Interceptor. This new ESI will eliminate surcharging, dry weather overflows and will reduce the amount of wet weather overflow in the waterfront area at BOS-057, 058 and 060 (Ref. 1). This replacement program is discussed in Section 5.3.3.

Boston Main Interceptor

The Boston Main Interceptor (BMI) carries sewage generally from west to east through the southern part of Boston. The BMI conveys flows from the other Boston interceptors (including the East Side Interceptor) to the junction with the MDC system at Columbia Point. The BMI collects sewage from the following interceptors: Roxbury Canal Sewer, the Dorchester Brook Sewer, the Dorchester Interceptor, the South Boston Interceptor (north branch), and the East Side Interceptor. The BMI's path (shown on Figure 5-4) is easterly along Camden Street to Washington Street, and on to Massachusetts Avenue where it continues east to a junction chamber near Kosciuszko Circle. Along the way, the BMI collects sewage from the East Side Interceptor near the intersection of Albany Street and Washington Street. The BMI is a 90' x 92" conduit there with a peak

flow capacity of 123 MGD. Average dry weather flows in the BMI are estimated to be about 44 MGD (Ref. 2).

The BMI carries sewage from Boston's various interceptors to a junction chamber located near Kosciuszko Circle (see Figure 5-4). Here, sewage is carried north along the MDC Columbus Park Connector (116" x 87" pipeline) to the MDC Columbus Park Headworks and MDC Tunnel and on to the Deer Island Treatment Plant. The average flow in the connector is approximately 64 MGD (Ref. 1).

MDC Tunnel to Deer Island

Sewage from the Boston Water and Sewer Commission's system enters the MDC system at the Columbus Park Headworks which has a capacity of 180 MGD (Ref. 2). The average dry weather flow to the Headworks is approximately 64 MGD (Ref. 1). The MDC Tunnel carries sewage from the Columbus Park Headworks to the Deer Island Treatment Plant and has a peak capacity of 440 MGD (Ref. 2).

The Deer Island Treatment Plant has a maximum hourly design treatment rate of 925 MGD (1983 data). The design pumping capacities of the headworks serving Deer Island totaled 888 MGD in 1983. In 1983, the actual average flow through the plant was 290 MGD compared to the average daily design flow of 343 MGD. The treatment plant provides primary treatment and chlorination prior to discharging the sewage to Boston Harbor (Ref. 3).

Calf Pasture Pumping Station to Moon Island

During periods when sewage flows exceed available capacity in the Columbus Park Headworks, the excess sewage is directed along the Boston Main Interceptor on Mt. Vernon Street to the Calf Pasture Pumping Station where it is pumped to Moon Island via the Dorchester Bay Tunnel. The

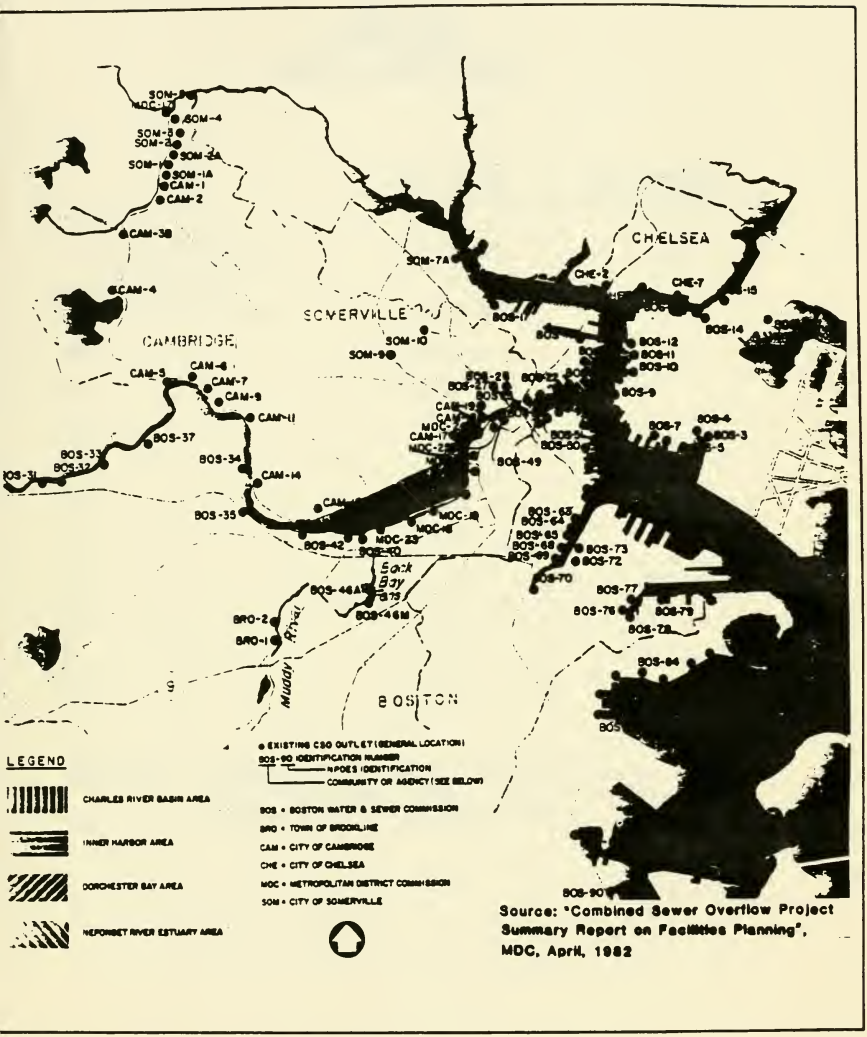
Moon Island facility is a wet weather and partial dry weather bypass for the MDC's Deer Island Treatment Plant. Overflows at Moon Island occur at a rate of 40 to 60 days per year under current conditions. Pumping problems existed at Deer Island in 1981 and 1982, resulting in 227 discharges from Moon Island. Upgrading of the MDC's Deer Island Treatment Plant is expected to be complete in 1987. This is expected to reduce discharges to about 12 per year at Moon Island. In the past, these discharges have been on the order of 5 to 16 million gallons each occurrence. After 1987, each discharge is expected to be less than 12 million gallons each occurrence (Ref. 4).

5.3.2 Existing Water Quality Problem

The O'Brien and Gere report (Ref. 2) estimates that storm-related combined sewer overflows to Boston Harbor occur on the order of 50-100 times a year dependent upon storm conditions. The overflows can apparently vary in length from several minutes to several hours. No data are available on specific overflows, however, O'Brien and Gere have estimated that the 108 combined sewer overflows which discharge to Boston Harbor and its tributary rivers from Boston, Cambridge, Somerville, Chelsea and Brookline (see Figure 5-5) resulted in approximately 11 billion gallons of combined sewer overflow in 1979. Sixty-four of these CSOs are in Boston, with eleven associated with the ESI (see Table 5-1). The MDC estimates that recent improvements have decreased these CSO discharges from Boston, Cambridge, Somerville, Chelsea and Brookline to about 5.7 billion gallons a year (Ref. 5, Ref. 6). Table 5-2 presents summary data characterizing the water quality of these overflows.

The combined sewer overflow problem has resulted in a number of water quality problems in the Harbor.

igure 5-5 Existing Combined Sewer Overflow Outlets



Source: "Combined Sewer Overflow Project Summary Report on Facilities Planning", MDC, April, 1982

TABLE 5-2
SUMMARY DATA
OVERFLOW WATER QUALITY

	Dry Weather	Combined Sewer Wet Weather
Total Coliform (colonies/100 ml)	7.1×10^8	3.7×10^7
Fecal Coliform (colonies/100 ml)	3.6×10^7	2.7×10^6
BOD	129.4	68.7
TSS	132.5	109.9
Hg	.5	1.5
Pb	.05	.06
Cu	.09	.09
Zn	.13	.13
Cl	.01	.04
Cr	.05	.05
TOC	103.2	41.8
COD	454.8	121.0

Reference: Combined Sewer Overflow Project Inner Harbor Area Facilities Plan," MDC, December, 1982, O'Brien and Gere Engineers, Inc.

Massachusetts Water Quality Standards specify the pollutant levels that must be met for various uses of water. In Boston Harbor water uses are often jeopardized by CSO discharges. The major pollutants of concern are pathogenic microorganisms (indicated by total and fecal coliform), suspended solids, biochemical oxygen demand (BOD), floating materials and oil and grease. Table 5-3 presents a summary of water quality in Boston Inner Harbor. Table 5-4 presents a summary of Massachusetts water quality standards applicable to Boston Harbor.

Violations of Water Quality Standards which have occured in the Harbor are as follows (Ref. 2):

- Coliform bacteria standards are intermittently or continually violated in all areas.
- Dissolved oxygen standards are frequently violated in the Inner Harbor as well as other locations.
- Floating materials and oil and grease violate the standards in all areas.

Insufficient capacity and hydraulic constraints in the East Side Interceptor currently cause dry weather overflow and increased wet weather overflow from downtown Boston. The Boston Water and Sewer Commission states that dry weather overflow is more or less continuous during periods of low tide at BOS-057 off Sargent's Wharf and BOS-060 off Central Wharf (Ref. 1). This is probably caused by tidal inflow combined with the hydraulic constraint in the ESI where the new waterfront section meets the old section near Harbor Towers. The O'Brien and Gere report (Ref. 2) reports that dry weather overflows in 1979 at BOS-060 appeared to average 1.54 MGD. The Boston Water and Sewer Commission also states that smaller dry weather overflows occur occasionally at other outfalls along Fort Point

TABLE 5-3

WATER QUALITY SUMMARY BOSTON INNER HARBOR

(mg/l)

Parameter	Maximum	Minimum	Average
pH[1]	8.0	7.6	7.8
Suspended Solids[1]	35.0	16.0	22.0
Oil and Grease[1]	2.6	0.0	1.3
Total Kjeldahl Nitrogen[1]	2.4	0.64	1.23
Ammonia Nitrogen[1]	0.19	0.01	0.07
Sulfate[1]	3,325	1,950	2,488
Total Phosphorus[1]	0.10	0.02	0.05
Conductivity[1] (umhos/cm)	40,000	34,000	38,800
Total Coliform[1] (# organisms/100 ml)	2,400	230	711[3]
Fecal Coliform[1] (# organisms/100 ml)	380	20	105[3]
Chloride[1]	14,000	11,000	13,300
Arsenic[2]	0.001	--	0.001
Cadmium[2]	0.014	0.0005	0.009
Chromium[2]	0.004	--	0.004
Copper[2]	0.01	0.0014	0.006
Lead[2]	0.017	0.002	0.012
Mercury (ug/l)[2]	0.05	0.005	0.035
Nickel[2]	0.02	0.004	0.016
Silver[2]	0.08	--	0.08
Vanadium[2]	0.04	--	0.04
Zinc[2]	0.145	0.002	0.05
Dissolved Oxygen[1]			
Surface	8.5	5.2	7.2
Middle (13'-18')	6.8	5.4	5.9
Bottom (26'-40')	6.8	3.4	5.5

Sources:

1 Massachusetts Department of Environmental Quality Engineering from sampling locations BH03 (Boston Inner Harbor north of mouth of Charles River near U.S. Naval Reserve), BHO-4 (tidal portion of Charles River downstream of Charlestown Bridge) and BH05 (Main Channel of Boston Inner Harbor near mouth of Fort Point Channel) surveyed July 14-15, 1983. Personal communication.

2 U.S. Army Corps of Engineers, 1981 and Massport Seaport Development, 1980.

3 Geometric mean of DWPC Data.

Reference: "DEIS Third Harbor Tunnel Project, Interstate 80, Appendix 7," U.S. DOT, MDPW, December 1982.

TABLE 5-4
BOSTON HARBOR
WATER QUALITY STANDARDS

Parameter	Criteria
For All Waters	
1. Aesthetics	All waters shall be free from pollutants in concentrations or combinations that: (a) Settle to form objectionable deposits; (b) Float as debris, scum or other matter to form nuisances; (c) Produce objectionable odor, color, taste or turbidity; or (d) Result in the dominance of nuisance species.
2. Radioactive Substances	Shall not exceed the recommended limits of the United States Environmental Protection Agency's National Drinking Water Regulations.
3. Tainting Substances	Shall not be in concentrations or combinations that produce undesirable flavors in the edible portions of aquatic organisms.
4. Color, Turbidity, Total Suspended Solids	Shall not be in concentrations of combinations that would exceed the recommended limits on the most sensitive receiving water use.
5. Oil and Grease	The water surface shall be free from floating oils, grease and petrochemicals and any concentrations or combinations in the water column or sediments that are aesthetically objectionable or deleterious to the biota are prohibited. For oil and grease of petroleum origin the maximum allowable discharge concentration is 15 mg/l.
6. Nutrients	Shall not exceed the site-specific limits necessary to control accelerated or cultural eutrophication.

TABLE 5-4 (Cont'd)

BOSTON HARBOR

WATER QUALITY STANDARDS

Parameter	Criteria
For All Waters (Cont'd)	
7. Other Constituents	Waters shall be free from pollutants in concentrations or combinations that: (a) Exceed the recommended limits on the most sensitive receiving water use; (b) Injure, are toxic to, or produce adverse physiological or behavioral responses in humans or aquatic life; or (c) Exceed site-specific safe exposure levels determined by bioassay using sensitive resident species.
For Class SC Waters	
1. Dissolved Oxygen	Shall be a minimum of 85 percent of saturation at water temperature above 77°F(25°C) and shall be a minimum of 6.0 mg/l at water temperature of 77°F(25°C) and below.
2. Temperature	None except where the increase will not exceed the recommended limits on the most sensitive water use.
3. pH	Shall be in the range of 6.5-8.5 standard units and not more than 0.2 units outside the naturally occurring range.
4. Fecal Coliform Bacteria	Shall not exceed a log mean for a set of samples of 1000 MPN per 100 ml, nor shall more than 10% of the total samples exceed 2500 MPN per 100 ml during any monthly sampling period, except as provided in 310 CMR 4.02(1).

Channel (BOS-062, 063, 064, 065, 068, 069, 070), although these tend to be much less frequent and are attributed to surcharging in the ESI (Ref. 1). No specific records on these overflow volumes have been compiled. The BWSC expects to issue a contract by the end of 1984 which will include metering outfalls in this area. Detailed information on the frequency and quantity of overflows should be available in 1985 (Ref. 1).

All of the CSO's are likely to overflow during any appreciable storm event. While no specific data are currently available on volume or frequency, O'Brien and Gere (Ref. 2) has estimated that nearly 40% of the pollutant loading caused by CSO's comes from BOS-070, the Roxbury Canal Conduit at the southern end of Fort Point Channel.

5.3.3 East Side and Boston Main Interceptor Replacement Plans

The O'Brien and Gere report (Ref. 2) has concluded that water quality in the Inner Harbor can be significantly improved if dry weather overflows are eliminated and if wet weather combined sewer overflows are properly controlled. The Metropolitan District Commission and the Boston Water and Sewer Commission are working on elements of a Recommended Plan for CSO control (Ref. 5). The plan's objective is to eliminate dry weather overflow by in-system modifications to tidegates and regulators, by improvements in collection capacity (e.g., new East Side Interceptor) and by continuing inspection and maintenance programs. Another objective is reduction of up to 75% in the frequency and volume of CSO. The goal is to provide treatment for all storms with a probability of occurring less than once per year with a six hour duration.

As one element in this program, the Boston Water and Sewer Commission has initiated a $60 million design and construction program to replace major sewer interceptor pipes. The program is designed to eliminate dry weather overflows caused by insufficient capacity in the existing systems and to provide replacements where the system has deteriorated. Funding for the project is provided by the federal government (75 percent), the state (15 percent) and the BWSC (10 percent) (Ref. 7). Design of the improvements began in January of 1980. Construction began in 1982 and is anticipated to run through 1989 for all system improvements (Ref. 1, Ref. 7).

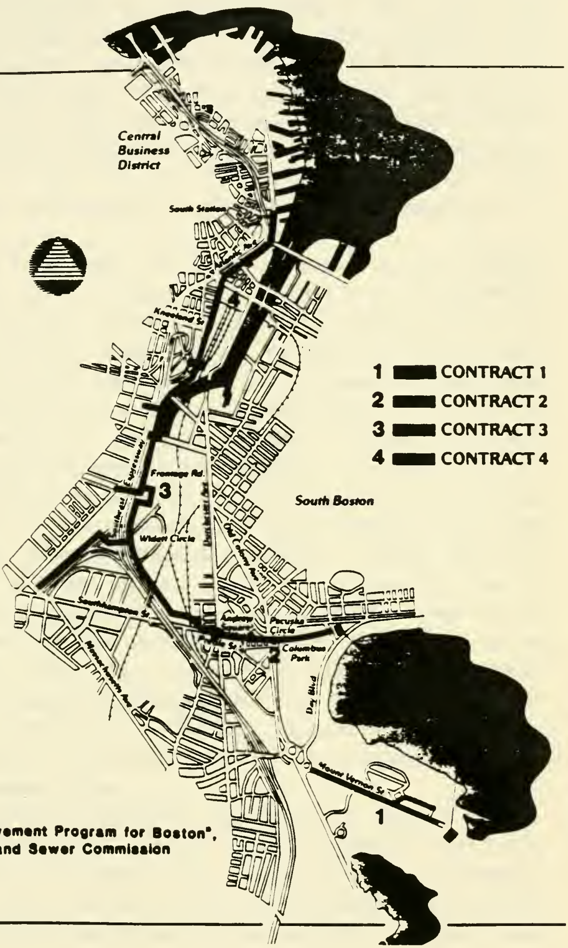
The New East Side Interceptor and Boston Main Interceptor will extend from the MDC's Columbus Park Headworks, in South Boston, to Atlantic Avenue near Rowes Wharf. Construction of the interceptors is divided into four major segments as shown on Figure 5-6. The New East Side Interceptor will collect wastewater from the downtown area. The New Boston Main Interceptor will receive this wastewater as well as wastewater received from portions of Roxbury and Dorchester, South Boston and the South End.

The Mount Vernon Street Sewer was the first segment of this replacement program. It was completed in 1983. This sewer provides separate sanitary service to Columbia Point (see Figure 5-6).

The portion of the New Boston Main Interceptor which runs from Andrew Square to the MDC Columbus Park Headworks was completed early in 1984 as the second segment. This 102" pipeline is 2650 feet long and has a capacity of 166 MGD. The existing BMI's equivalent capacity is 123 MGD (Ref. 8). This sewer receives flow from the south branch of the South Boston Interceptor.

Now under construction, the third segment will replace the portion of the old East Side Interceptor and old

igure 5-6 New Interceptor Lines



Source: "A Sewer Improvement Program for Boston", Boston Water and Sewer Commission

Boston Main Interceptor that runs from the South Station Railroad Yard down to Andrew Square. The new line consists of 9000 feet of 84" and 102" pipeline with capacities ranging from 136 to 166 MGD (compared to the current 36 MGD) (Ref. 8). This segment also includes an extension of the East Side Interceptor from Widett Circle to Massachusetts Avenue to serve the South End and parts of Roxbury. This line is 3000 feet of 60" pipe. The third segment was started in 1984 and will be completed in 1986.

The final element in this program is the fourth segment which will replace the old East Side Interceptor from Harbor Towers, where the new ESI completed with the Waterfront Project ends, to the South Station Railroad Yard. The initial piece of this segment runs from Kneeland Street down to the Rail Yard (Ref. 8). It is a 1200 foot section of 78" pipeline with a capacity of 127 MGD. This part of the fourth segment is expected to be completed in 1985 as part of the MBTA project work in the Railroad Yard. The remainder of this segment runs from Harbor Towers down to Kneeland Street. Design work on this section has been almost completed and construction is expected to be completed by the end of 1987. This final part will be 4000 feet of 78" pipeline intended to serve the downtown area. It will have a capacity of 43 MGD (Ref. 8) as compared to the current 5-9 MGD (Ref. 2). The Boston Water and Sewer Commission is currently preparing design packages to initiate funding for various parts of this final segment (Ref. 1).

It is clear by comparing the capacity numbers listed above for the old and new ESI and BMI segments that this new pipeline will significantly improve sewer performance along the Inner Harbor. The Boston Water and Sewer Commission expects operation of the new ESI, combined with

the current inspection and maintenance program, to eliminate all dry weather overflows, including the large one at BOS-060 (Central Wharf). In addition, the new line will decrease the volume and frequency of storm-related CSO (Ref. 1). As discussed in the O'Brien and Gere report (Ref. 2), the completion of the new interceptors will improve water quality significantly in the Inner Harbor.

5.3.4 Deer Island Treatment Plant Improvement Plans

The MDC is currently implementing a program of upgrading the Deer Island Treatment Plant in accordance with Judge Garrity's Procedural Order (City of Quincy vs. MDC, et al) (Ref. 9). An immediate upgrade is being implemented to improve pumping capacities at the plant. This program is intended to minimize failures of pumping equipment at Deer Island which lead to increased discharges at CSO facilities and the Moon Island outfall. This upgrade is expected to be complete by 1988.

A longer term improvement plan includes construction of a new facility to increase treatment capacity. This program will extend into the mid 1990's.

5.3.5 Combined Sewer Overflows Improvement Plans

The MDC is currently implementing a major program to treat and/or limit discharges from combined sewer overflows throughout the MDC system. MDC plans to complete CSO treatment facilities which will eliminate discharges of raw sewage at Tenean Beach, Malibu Beach and Constitution Beach within the next five years, as well as along a portion of the Charles River and the Mystic River in Somerville (Ref. 6).

Another program expected to be completed over the next seven years, will include 17 combined sewer overflow projects (Ref. 10). These projects include storage and

treatment facilities designed to reduce the major, chronic sources of pollution in Boston Harbor. The Fort Point Channel CSO Treatment Facility is included among these projects. This facility will significantly reduce pollutant loads to Fort Point Channel (BOS-070) by treatment of CSO which will include screening, swirl concentrators and disinfection. This will result in significant improvement in water quality in the Inner Harbor, (Ref. 2, Ref. 6).

PROJECT IMPACT

6.0 PROJECT IMPACT

6.1 Site Vicinity

The proposed building will generate approximately 47,000 gallons of sanitary sewage daily. This represents an additional load to the combined sewer system in the site vicinity. This wastewater will be discharged into the combined sewer system at a maximum rate of 200 gpm during the two 4-hour low tide periods each day. The sanitary sewer connection will be made to the High Street sewer which has a calculated capacity of approximately 9500 gpm. The building's sanitary load represents about 2 percent of the capacity in this line. Since the High Street sewer line starts at the 150 Federal Street site, there are no significant upstream loads to hinder this line's ability to accept the new flow.

Downstream of the connection, the High Street sewer ties into the Congress Street sewer at the Congress-High Street intersection. This sewer has a calculated capacity of 6800 gpm in a short stretch near the site. The additional sanitary sewage from the new building is less than 3 percent of this capacity. Again, this sewer serves only the immediate site area so that upstream loads are minimal.

As discussed in Section 5.2.3, the Congress Street sewer leads to the Milk Street sewer and then on to the East Side Interceptor. Away from the site vicinity, the street sewers are sufficiently large that the new building's 200 gpm sewage flow will constitute much less than 1 percent of the available capacity in these pipes. There are no data available on current flows in these street sewers but the BWSC expects no problem resulting from the new sewage load (Ref. 1). By way of comparison, the combined sewer system in this area served a daytime population of 54,000 in 1980 (Ref. 2). O'Brien and Gere estimates that this resulted in a dry weather sewer flow

of over 4,000,000 gallons per day (Ref. 2). On a daily basis then, the new sewage load of 47,000 gallons per day represents 1.2 percent of this calculated flow.

6.2 East Side Interceptor

6.2.1 Existing ESI

As a result of the current problems with the East Side Interceptor, there are frequent storm-related combined sewer overflows and occasional dry weather overflows in the area. Overflows potentially affected by the project include BOS-060, 062, 063, 064, 065, 068, 069 and 070 (see Figure 5-4). There is some potential for additional flows from new development, no matter how small or well-mitigated, to contribute to the frequency and volume of overflows until the ESI replacement is complete. Currently, data on these overflows are limited so that quantification of the project's impact on the current system can only be done in a relative way by comparing expected project flows to pipe capacity and calculated flows.

The current capacity of the ESI in the downtown area ranges from 5 to 9 MGD. The additional sewage from the project represents less than 1 percent of this capacity. Although the additional sewage may contribute to the current overflow situation at BOS-060, it is not a significant impact.

6.2.2 New ESI

The BWSC is firmly committed to completing the ESI replacement project (Ref. 1, Ref. 7). When the New ESI is in place, the Commission expects dry weather overflows in the area to cease and the frequency and volume of wet weather overflows to decrease significantly (Ref. 1). The New ESI will have a capacity of 43 MGD (Ref. 8). The additional sewage generated by the project will be about 0.1 percent of this available capacity.

The New ESI is scheduled for completion shortly after completion of the project. Once the New ESI is operational, there will be no potential for the project to contribute to dry weather overflows and only a negligible impact on periodic wet weather overflows which may occur.

6.3 Boston Harbor Water Quality

Section 5.3.2 describes the existing water quality problems in Boston Harbor. These water quality problems are caused primarily by combined sewer overflows (Ref. 5). These overflows are measured in millions of gallons per day. The addition of 200 gallons per minute from the project would be insignificant even if it were to go directly to the Harbor at all times, which is not the case.

The MDC and the BWSC are expecting the Boston interceptor replacement project, CSO improvement projects and the improvements at the Deer Island Treatment Plant to result in significant improvements in Boston Harbor water quality (Ref. 5). The CSO overflow problem is one of huge dimensions. The plan that the MDC and BWSC are implementing represents the massive level of effort that is required to improve water quality in the Harbor in a significant manner. Continued implementation of this plan will lead to the following water quality benefits (Ref. 11):

- Elimination of dry weather overflow.
- Reduction in frequency and volume of untreated CSO discharges by 75%.
- Maintenance of designated water uses (swimming, boating, fishing, etc.) all but a very few days per year.
- Reduction of pathogenic bacteria by 99%, thereby resulting in attainment of Water Quality Standards.

- Improved control of floating and settleable materials.

On an individual project basis, the BWSC is requiring use of certain mitigation measures such as the sewage detention tank to minimize the problem until the New ESI and other plan elements are complete.

MITIGATION MEASURES

7.0 MITIGATION MEASURES

7.1 Project-Specific

The following mitigation measures will be implemented for the 150 Federal Street project.

1. Installation of the most efficient plumbing fixtures including limited flow taps (3 gpm vs 5 gpm) and toilets that require about 60% the water of the more conventional equipment, as required by the state plumbing code.

2. Use of a sewage detention tank sized to store an entire day's sanitary sewage. The tank system will include a triplex pumping system and a programmable tide clock controller. Sanitary sewage will be pumped into the combined sewer system only during periods of low tide. This will reduce loads on the system during high tide periods when surcharging caused by tidal inflow is a problem.

3. Design and construction of separate storm and sanitary connections. This will allow easier adjustments should the BWSC implement separate storm and sanitary sewers in the area at some future time. Currently, the BWSC has no plans to construct a separate storm sewer in the site vicinity due to the distance from the site to the nearest existing storm sewer. Future development may bring a storm sewer closer to the site at which time a separate storm sewer serving the site would be considered (Ref. 1).

4. Consideration of other discharge schemes for the programmable pumping system. Currently, the BWSC feels that tidal inflow is the single largest cause of surcharging. When the New ESI is operational and tidegate repairs complete, tidal inflow will not be a significant problem. At that time, the BWSC could determine that another scheduling scheme would improve sewer performance. The project will have the detention tank and pumping system in place. The project proponent is prepared to operate the programmable pumping system on any feasible schedule proposed by the BWSC. This could include time of day pumping to avoid peak daytime flow or elimination of discharge during storm conditions. Both of these mitigation measures could be implemented using the same detention tank system currently planned and described in Section 3.6.

7.2 System-Wide Measures

Mitigation measures implemented by individual new developments can reduce localized problems and can assist in achieving improvement to water quality in the Harbor. However, real improvement can only be made with the massive efforts to upgrade the combined sewer system operation currently being undertaken by the MDC and the BWSC. These include the following (Ref. 5):

1. Construction of the New East Side Interceptor. This project will be completed by the end of 1987. It will increase the ESI capacity in the site area from the current 5-9 million gallons per day to 43 million gallons per day (Ref. 8). It will eliminate the hydraulic constraint currently causing surcharging in the vicinity of Central Wharf (BOS-060) (Ref. 1). It

is also expected to eliminate dry weather overflows and reduce wet weather overflows at all the combined sewer overflow outlets that would be impacted by the project (Ref. 1, Ref. 2).

2. Continuation and expansion of the inspection and maintenance program for tidegates and regulators. In 1980, the Commission instituted a program to inspect all tidegates and regulators at least two times each quarter. Maintenance on broken tidegates at Central Wharf (BOS-060) and Long Wharf (BOS-058) is expected to be completed in 1985. This will reduce tidal inflow that currently causes surcharging in the combined sewer system in that area (Ref. 1).

3. Implementation of the Combined Sewer Overflow Recommended Plan, including the installation of new CSO treatment facilities for screening and disinfecting CSO discharges, replacement of tidegates and regulators, sewer separations, and storage facilites. This 10-year program is projected to eliminate dry weather overflows and reduce the discharge of untreated CSO by 75 percent. The construction of the Fort Point Channel CSO Treatment Facility which will greatly reduce CSO pollutant discharges to Boston Harbor is scheduled for completion within 7 years (Ref. 5, Ref. 6, Ref. 11).

4. Completion of improvements to the Deer Island Treatment Plant (Ref. 9, Ref. 10).

Conclusion

Taken in total, the project-specific and system-wide mitigation measures represent a significant minimization of the potential impact of 150 Federal Street. The project-specific mitigation measures will be sufficient to minimize project impacts until ongoing system-wide improvements are completed (most importantly, the replacement of the East Side Interceptor). The system-wide improvements will essentially eliminate any potential negative impact of the project on combined sewer overflows or water quality in Boston Harbor.

REFERENCES

8.0 REFERENCES

Ref. 1 Discussions with Boston Water and Sewer Commission.

Ref. 2 "Combined Sewer Overflow Project, Inner Harbor Area Facilities Plan," MDC, December 1982, prepared by O'Brien & Gere Engineers, Inc.

Ref. 3 "MDC Sewerage Division 64th Annual Report," June 30, 1983.

Ref. 4 "Report to the MDC Sewerage Division on Discharges from Moon Island", April 1984, Camp Dresser & McKee, Inc.

Ref. 5 "Combined Sewer Overflow Project Summary Report on Facilities Planning", MDC, April 1982.

Ref. 6 "Proposed Capital Program for MDC Sewerage," MDC, February 27, 1984.

Ref. 7 "A Sewer Improvement Program for Boston", Boston Water and Sewer Commission.

Ref. 8 Discussions with Camp Dresser & McKee, Inc.

Ref. 9 "Procedural Order, City of Quincy vs. MDC, et al", Paul J. Garrity, Justice of the Superior Court.

Ref. 10 Discussions with Metropolitan District Commission.

Ref. 11 "Combined Sewer Overflow Project Environmental Impact Report", Camp Dresser & McKee, January 1982.

CIRCULATION LIST

9.0 CIRCULATION LIST

The Draft EIR has been circulated to the agencies identified below in accordance with MEPA regulations and the November 8, 1984 Certificate of the Secretary of Environmental Affairs. Copies of this Draft EIR may be obtained from Michael McGinnis, Meredith & Grew, 125 High Street, Boston, MA 02110 (617-482-5333).

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